

**XEROTHRIPS DISSIMILIS NEW GENUS AND SPECIES (THYSANOPTERA:
THRIPIDAE) FROM CALIFORNIA AND NEVADA**

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Abstract.—A new genus *Xerothrips* and new species *dissimilis* are described from California and Nevada. An unusual internal gland in abdominal segment III of the males of *dissimilis* and a similar gland previously reported in other species are discussed.

Key Words: Thysanoptera, Thripidae, *Xerothrips*, *dissimilis*, internal gland

Xerothrips dissimilis new genus and species is known from the Mohave Desert of California and Nevada, and in the central valley of California. This monotypic genus is closely related to *Baileyothrips* which occur in the southwestern states. The females are macropterous and brachypterous and the known males are brachypterous. Although collected from several plants grown commercially, *X. dissimilis* is not known to be a pest.

Males of many species in the family Thripidae bear glandular structures of various shapes (circular, elliptical, transversely elongate and usually narrowed medially, v-shaped, c-shaped) on abdominal sternites III-VII and known in the literature as "glandular areas" or "areae porosae." Males of *Xerothrips dissimilis*, new species, lack glandular areas but have an unusual internal gland in abdominal segment III that opens through a small circular orifice near the anterior margin of the sternite (Fig. 9). A similar gland reported previously in another species is associated with a glandular area also on abdominal sternite III. The gland in males of *Baileyothrips arizonensis* (Morgan) illustrated by Kono and O'Neill (1964) opens through an orifice on the anterior part of an elliptical, reticulated

glandular area located on the anterior part of the sternite. A similar glandular area was also observed in a male of *B. limbatus* (Hood). Males of *Pseudothrips beckhami* Beshear and Howell and *P. inequalis* (Beach) have a reticulated glandular area similar to that of *Baileyothrips* and a small, slightly tuberculated area with an protruding orifice in front of the glandular area (Beshear and Howell 1976), thus indicating that a internal gland is present. The internal gland was visible only in cleared and stained males. Because thrips are not normally stained, the gland could be present in other species.

Acronyms of depositories of type specimens are as follows: CAS = California Academy of Sciences, San Francisco; CDFA = California Department of Food and Agriculture, Sacramento; FSCA = Florida State Collection of Arthropods, Gainesville; INHS = Illinois Natural History Survey, Champaign; NHM = Natural History Museum, London, United Kingdom; SMF = Forschungsinstitut Naturmuseum Senckenberg, Frankfurt am Main, Germany; UCD = University of California, Davis; UCR = University of California, Riverside; USNM = United States National Museum of Natural History, Washington DC.

***Xerothrips* Nakahara, NEW GENUS**

Type species.—*Xerothrips dissimilis*, new species.

Female: Antenna 8-segmented, segments III and IV with forked trichomes, trichome on outer apical margin on III often appearing simple, that on IV ventral and forked. Head with 3 ocelli; 3 pairs of ocellar setae; 2 pairs of postocular setae between posterior part of eyes; eyes with 6 pigmented facets; maxillary palpi 3-segmented. Legs with 2 segmented tarsi. Pronotum rectangular; with 1 pair of well developed posteroangular setae; occasional macroptera with additional developed, outer posteroangular setae. Mesonotum with submedian setae slightly caudad of lateral setae. Mesosternal spinula weakly developed. Brachyptera with short, oval forewings with a few marginal and veinal setae; macroptera with two complete rows of veinal setae, anterior and posterior fringe cilia straight. Abdomen with median setae long on tergites II–VIII, close-set on tergite II and succeeding longer and farther apart posteriorly; posteromarginal flange absent; ctenidia absent; tergite VIII with well developed posteromarginal comb. Sternites III–VII with discal setae and each with 3 pairs of posteromarginal setae.

Male: Abdominal tergite IX with bristle-like setae; sternites without glandular areas; segment III with internal gland (Fig. 9).

Etymology.—Generic epithet is a combination of the Greek “Xero” (dry) and the common name of order “thrips.” This genus is known from the Mohave Desert and central valley of California.

Comments.—Brachyptera and macroptera closely resemble the two members of *Baileyothrips*, *arizonensis* (Morgan) and *limbatus* (Hood), in having 8-segmented antennae, two pairs of postocular setae between posterior margin of eyes, six pigmented facets on each eye, forewing with fringe cilia straight, long median pair of tergal setae on abdomen, additional discal setae on posteromargins of sternites, and the

males with a internal gland in abdominal segment III. The two genera differ as follows. In *Xerothrips*, at least one pair of pronotal posteroangular setae is present; forewing of macroptera has two complete rows of veinal setae, and the costal setae are as long as the width of wing at midlength; abdominal tergites lack a posteromarginal flange; and small discal setae are present on the pleurotergites. The gland in abdominal segment III of males opens in a small orifice in a slightly differentiated area on anterior medial part of the sternite (Fig. 9). In *Baileyothrips*, the pronotum lacks developed posteroangular setae; forewing has short, intermittent setae on the distal half of the forevein, and short costal setae are about $\frac{1}{4}$ as long as width of wing at midlength; abdominal tergites each have a posteromarginal flange with teeth laterally; and pleurotergites lack discal setae. The gland in abdominal segment III of males opens into a orifice at the anterior part of an elliptical, reticulated glandular area on the sternite (Kono and O’Neill 1964).

Xerothrips will run to *Oxythrips* in couplet 34 of the generic key in “The Thrips of Illinois” by Stannard (1968:275). *Xerothrips* has a posteromarginal comb on abdominal tergite VIII which is absent from *Oxythrips*. Macroptera having well developed outer posteroangular setae will key to *Taeniothrips* in couplet 36 in Stannard (1968). However, these setae are shorter and more slender than the inner posteroangular setae and usually are only as long as some posteromarginal setae. Thus, the outer setae of the macroptera are not typical posteroangular setae. The two genera differs as follows: In *Taeniothrips*, two pairs of ocellar setae are on the head, median pair of abdominal tergal setae are short and far apart, and abdominal sternites of males have glandular areas. In *Xerothrips*, three pairs of ocellar setae are on the head, and abdominal tergal median setae are long with those on anterior tergites close to each other.

Xerothrips dissimilis Nakahara,

NEW SPECIES

Female (brachypterous): Body yellowish brown; tarsi yellow, tibiae and femora yellow basally and distally, yellowish brown medially; ocellar crescents gray-brown; setae pale yellow; antennae yellow with apices of III–IV pale brown, distal $\frac{1}{3}$ of V brown, VI brown, paler in basal $\frac{1}{3}$, VII–VIII brown.

Antenna (Fig. 1): About 2.2 times longer than head; segment III oval, 1.5 (1.5–1.6) times longer than wide; IV oval, 1.35 (1.2–1.3) times longer than wide, apex about $\frac{2}{3}$ as wide as segment (Fig. 1b), barely extending distal of base of ventral trichome; VI not pedicelate at base; forked trichome on III on outer apical margin (Fig. 1a), one fork of trichome often oriented dorsad so other fork appears as simple trichome; ventral forked trichome on IV about 10 μm long; inner sense cone of VI in distal $\frac{1}{4}$ of segment, and 15 μm long (Fig. 1c).

Head (Fig. 2): Wider than long, cheeks slightly arched, shorter than length of eyes, ocellar area slightly raised. Ocellar setae I anterior of fore ocellus (Fig. 2a), about 12 μm long, setae II anterolaterad of fore ocellus (Fig. 2b), near mesal margin of eye, about 7 μm long, ocellar setae III between anterior and posterior ocelli (Fig. 2c), about (15) μm long. Postocular setae between eyes (Fig. 2d): 1 pair behind hind ocelli about 7 μm long, second pair near margin of eyes about 10 μm long, occasionally 1 or 3 pairs present; 2 pairs behind eyes near lateral margin of head. Sculpture of occiput transverse, striae rather far apart. Mouthcone conical, about 1.25 times longer than head, and reaching posterior margin of prosteronum.

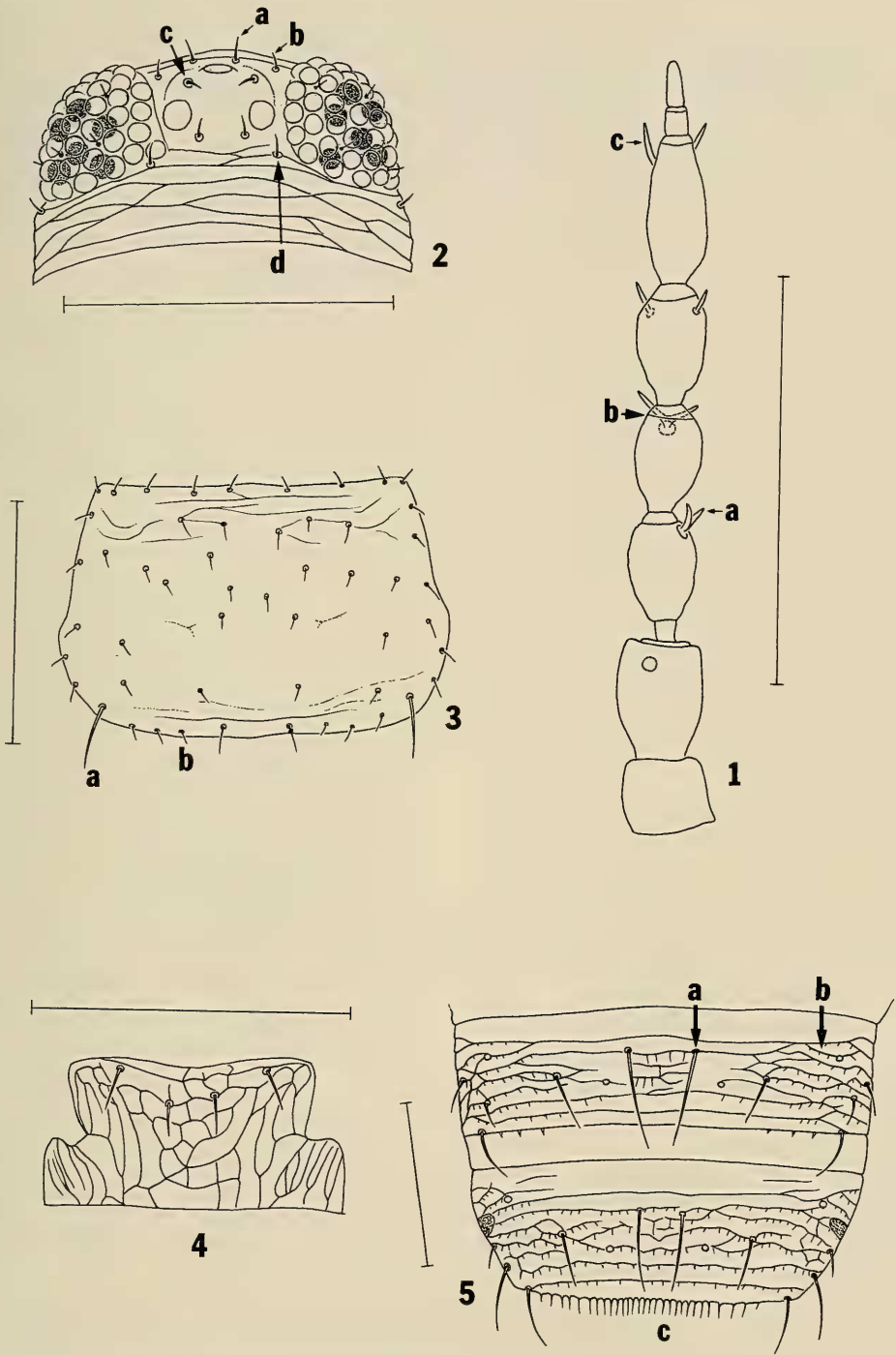
Pronotum (Fig. 3): Wider than long, about 1.5 times longer than head, disc weakly sculptured transversely. Discal setae short; posteroangular setae 27–30 (22–35) μm long (Fig. 3a), $\frac{1}{5}$ – $\frac{3}{10}$ as long as pronotum; 4–8 posteromarginal setae (Fig. 3b), median pair longest, 12 (12–15) μm long.

Basantra spinulose; ferna fused; prospinasternum rather wide, with tuberculate posteromedial spina. Mesonotum. Without anteromedial campaniform sensilla. Mesosternal anteromedial process inserts into spina of prospinasternum. Metanotum (Fig. 4). Completely reticulated, without campaniform sensilla. Median setae proximal or posterior of anterior margin, 15 (12–15) μm long; lateral setae 15 (17–20) μm long.

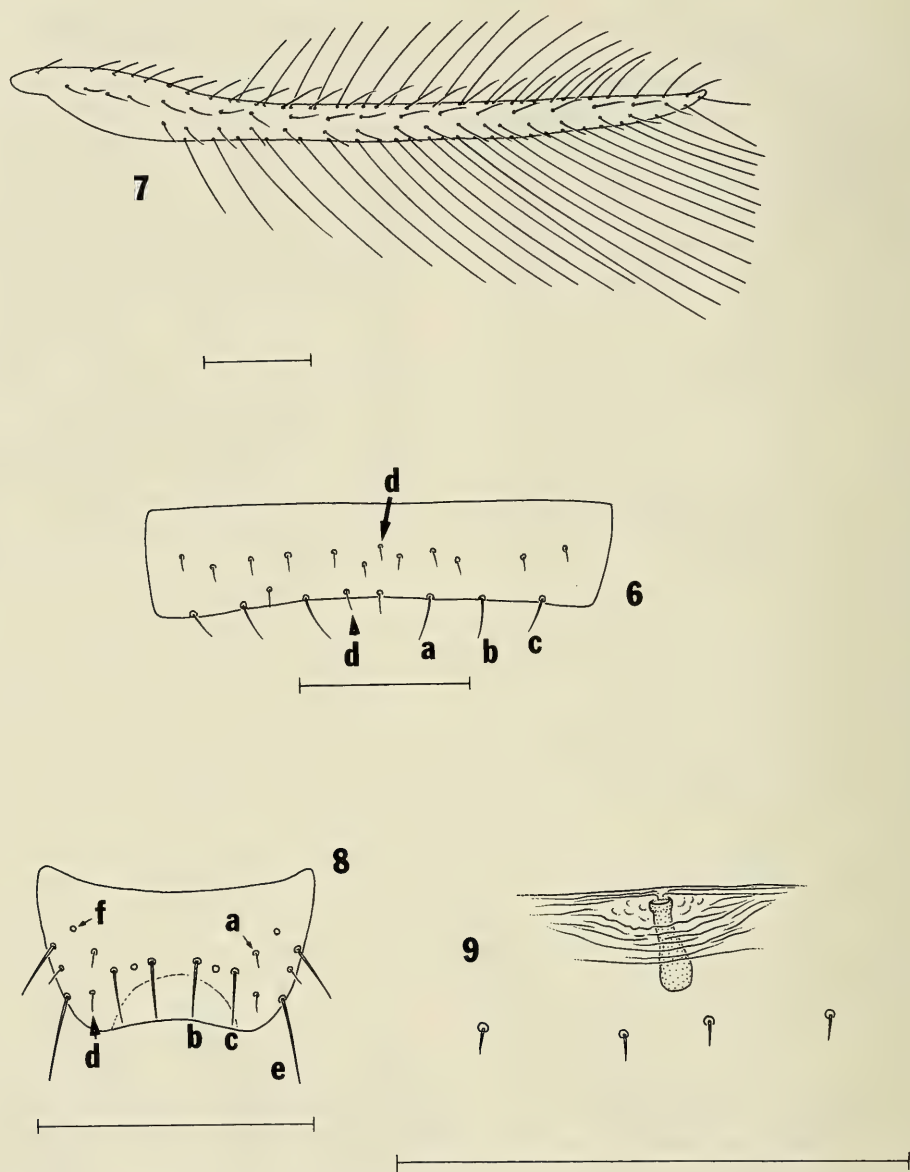
Forewing: Oval, extending posteriorly about length of metanotum, apical margin broadly arched; with few marginal and veinal setae.

Abdomen (Fig. 5): Tergites completely sculptured, rather sparsely striated, with 5–6 striae medially on tergites IV–VII. Median setae on tergite VII 52 (50–62) μm long, on VIII 47 (44–50) μm long (Fig. 5a). Posteromarginal comb complete on tergite VIII (Fig. 5c), close-set, more slender and shorter microtrichia between more developed ones, longest 15 (10–15) μm long. Microtrichia on sculpture lines submarginally (Fig. 5b) and between median setae on tergites VI–VII, throughout tergite VIII, median ones on VI–VIII longest, a few minute teethlike microtrichia submarginally present or absent on tergites VI–VII. Tergite IX with short D1 setae, 2 pairs of campaniform sensilla, posterior pair near B1 setae; B1 setae 52 (42–54) μm long, shorter than tergite X, B2 setae longer than B1 and B3 setae, and 67 (59–74) μm long, B3 setae 57 (50–54) μm long. Tergite X slightly longer than IX, divided in posterior $\frac{1}{2}$ by dorsal split; dorsal campaniform sensilla near base of B1 setae, in posterior $\frac{1}{3}$ of tergite; B1 setae 47 (47–52) μm long, B2 setae 52 (47–52) μm long. Sternite I with 4 minute anteromedian setae. Sternites II–VII with short discal setae (Fig. 6d), 19 (16–19) on VII, and several on posterior margins. B1–B3 setae on sternites III–VII on posterior margin (cf. Fig. 6a–6c). Ovipositor well developed, 227 (203–225) μm long. Pleurotergites III–VII with 2–4 discal setae.

Female (macropterous): Light brown with light orange internal pigments; all tarsi



Figs. 1-5. *Xerothrips dissimilis* brachypterus female. 1, Antenna (a, forked trichome on segment III positioned laterad; b, apex of segment IV; c, sense cone on segment VI). 2, Head (a, ocellar seta I; b, ocellar seta II; c, ocellar seta III; d, postocular seta). 3, Pronotum (a, posteroangular seta; b, posteromarginal setae). 4, Metanotum. 5, Abdominal tergites VII and VIII (a, median seta; b, submarginal microtrichia; c, posteromarginal comb on tergite VIII).



Figs. 6-9. *Xerothrips dissimilis*. 6, Abdominal sternite VI of brachypterous female (a, B1 seta; b, B2 seta; c, B3 seta; d, discal setae). 7, Forewing of macropterous female. 8, Abdominal tergite IX of male (a, D1 seta; b, B1 seta; c, B2 seta; d, B3 seta; e, posterolateral seta; f, campaniform sensillum). 9, Internal gland in abdominal sternite III of male. Scale = 0.1 mm.

yellow, tibiae and femora yellowish brown with apices lighter; forewings light brown; major setae brown; antennae light brown with median part of segment III paler brown.

Similar to brachyptera in most structural characters.

Pronotum: Posteroangular setae $47\ \mu\text{m}$ long, about $\frac{1}{3}$ as long as pronotum; occasional specimens with additional (outer) pair of posteroangular setae developed, $30\text{--}35\ \mu\text{m}$ long, more slender and shorter than inner pair, about as long as some postero-marginal setae.

Forewing (Fig. 7): Pointed apically, 573–722 μm long, about 47–57 μm wide at midlength; 19–25 costal setae, about 44 μm long at midlength, slightly shorter than width of wing; 9–15 anterior fringe cilia; 16–22 setae in complete row on forevein, 10–16 setae on hindvein. Scale with 5 marginal and 1 discal setae.

Abdomen: Posteromarginal comb on tergite VIII with microtrichia 15–20 μm long, longer than on brachyptera. Ovipositor 178–190 μm long, shorter than on brachyptera.

Male (brachypterous): Similar to but shorter than female brachyptera. Abdominal tergite VIII with posteromarginal comb of microtrichia. Abdominal tergite IX with bristlelike setae (Fig. 8); D1 setae 12 μm long (Fig. 8a), anterolaterad of B1 setae and farther apart than distance between B2 setae; B1–B2 setae in arched line (Fig. 8b, 8c), B1 and B2 setae 17–27 μm long, B3 setae 12 μm long (Fig. 8d), between B2 seta and posterolateral seta (37 μm long) (Fig. 8e); campaniform sensilla between B1 and B2 setae, another pair anterolaterad of D1 setae (Fig. 8f). Sternites II–VIII with discal setae; abdominal segment III with internal gland that opens through a small orifice in slightly differentiated area near anteromedial margin of sternite (Fig. 9).

Measurements of body and antenna of brachypterous female in microns. Measurements of holotype given first followed by those of paratypes in parenthesis. Body length 1136 (1160–1260) (distended). Antenna: total length 191 (183–192); length and width of segment I 17(17), 22(22–24); II 30(27–32), 22(22–23); III 30(30), 20(18–20); IV 27(24–27), 20(20); V 30(27–30), 18(20); VI 38(35–37), 17(17); VII 7(6–7), 7(7); VIII 12(12–15), 5(5–6). Head length 86, width at eyes 111 (101–117), width at cheeks 119 (111–128); eye length 50, width 35 (35–37); mouthcone length 109 (106–109); pronotum length 109 (111–124), width 161 (161–180); length of tergite IX 54 (54–57); length of tergite \times 62 (62–64).

Measurements of body and antenna of

macropterous females in microns. Body length 996–1050. Antenna: Total length 221–226; length and (width) of segment I 20(22–24), II 32 (24), III 35–37(17–22), IV 30–31(17–20), V 32–35(17), VI 45–47(17), VII 8–10(6–7), VIII 16–17(5).

Measurements of body and antenna of brachypterous male in microns. Body length 950 (distended). Antenna: Total length 157; length and (width) of segment I 15(20), II 27(21), III 25(16), IV 21(17), V 22(18), VI 32(15), VII 5(7), VIII 10(5).

Type material.—Holotype brachypterous f (USNM), 19 brachypterous f paratypes: Mojave, Kern Co., California, *Eriastrum densifolium* subsp. *mohavense* (T. T. Craig) Mason, I-31-68, T. R. Haig (CDA 68B2) (CDFA, USNM). Brachypterous paratypes. California: 4 mi. east of Monolith (Kern Co.), 86 f , 3 m , *Eriastrum densifolium* subsp. *mohavense*, 17-IX-66, T. R. Haig (CDFA, FSCA, INHS, NHM, SMF, UCD, UCR, USNM). Macropterous f paratypes. California: Davis (Yolo Co.), 1, *Quercus agrifolia* Nee, 22-X-52, E. I. Schlinger (UCD); 1, under grape vine bark, 16-I-39, S. F. Bailey (UCD); Porterville (Tulare Co.), 1, in lichen on fig tree, 16-I-36, E. Baker (UCD); Upper Lake (Lake Co.), 1, sweeping grass on ditch bank, 14-V-47, S. F. Bailey (UCD). Nevada: Mercury (Nye Co.), 2, PHA.VAL., 12m(HF)-242, CDJ, 24-V-62 (INHS). Other examined macropterous f f . California: Coarsegold (Madera Co.), 8, *Tillandsia* sp., 9-XII-93, B. Rohn and A. Espinosa (USNM).

Distribution.—United States (CA, NV).

Hosts.—*Eriastrum densifolium* subsp. *mohavense* (T. T. Craig) Mason, grass, *Quercus agrifolia* Nee, *Tillandsia* sp., *Vitis* sp.

Etymology.—Specific epithet based on Latin “dissimilis,” meaning unlike. Males of this species have an unusual, internal organ in abdominal segment III with a small orifice on the sternite.

Comments.—Brachyptera are known only from Kern Co., California; whereas the macroptera were collected from different localities in California and Nevada. The

males are brachypterous and known only from the two populations in Kern Co.

Thrips are not normally stained. However, a cleared and stained specimen was selected as the holotype because most of the structural characters of the unstained specimens could not be observed clearly. The coloration is based on the unstained paratypes.

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